



University of St.Gallen

Institute of Information Systems  
and Digital Business

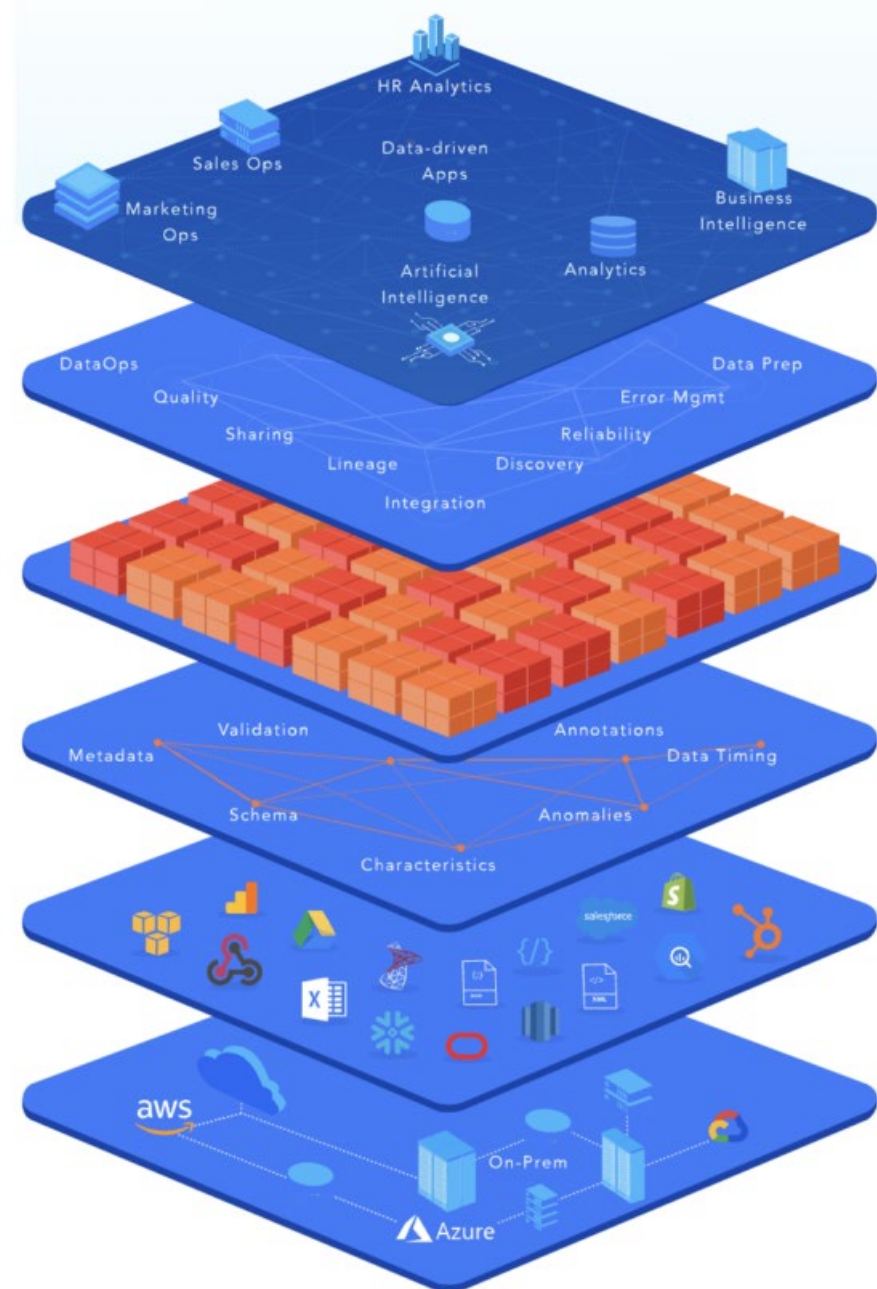
# Von Datenlagern zu Datenprodukten: Sollte Informationslogistik dezentralisiert werden?

Robert Winter

12.05.2026

ZDI Digital Innovation Talk

From insight to impact.



“Exploded View” visualization of data product management (illustrative)

Source: <https://nexla.com/data-fabric-architecture/data-product-management/>

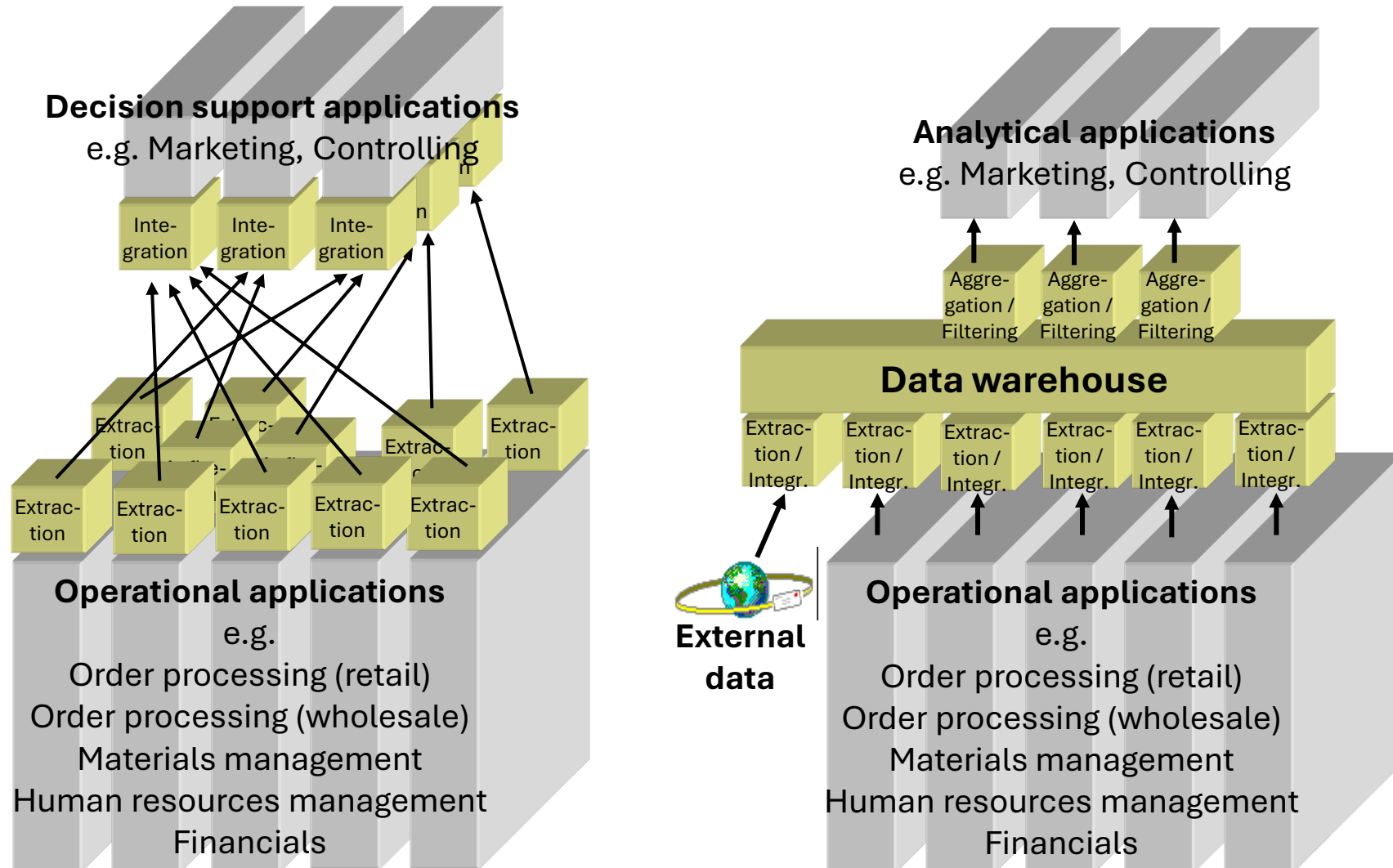
# Agenda

1. Dispositive “Datenlager” – notwendig aber immer problematischer
  - “Datenlager” – eine wichtige und richtige Innovation in den 1990ern
  - 30 Jahre später: Viel mehr Datenproduktion, viel mehr Datennutzung, das Datenlager wird zum Flaschenhals
2. Dezentralisierung in der Informationslogistik
  - Löst Dezentralisierung das Flaschenhalsproblem?
  - Was muss zusammenpassen, damit Dezentralisierung funktioniert?
3. Datenprodukte
  - Konzept und Typologie
  - Vom Produktions- zum Servicemanagement
4. Ausblick: Mit KI wird alles {besser | anders | schwieriger}?

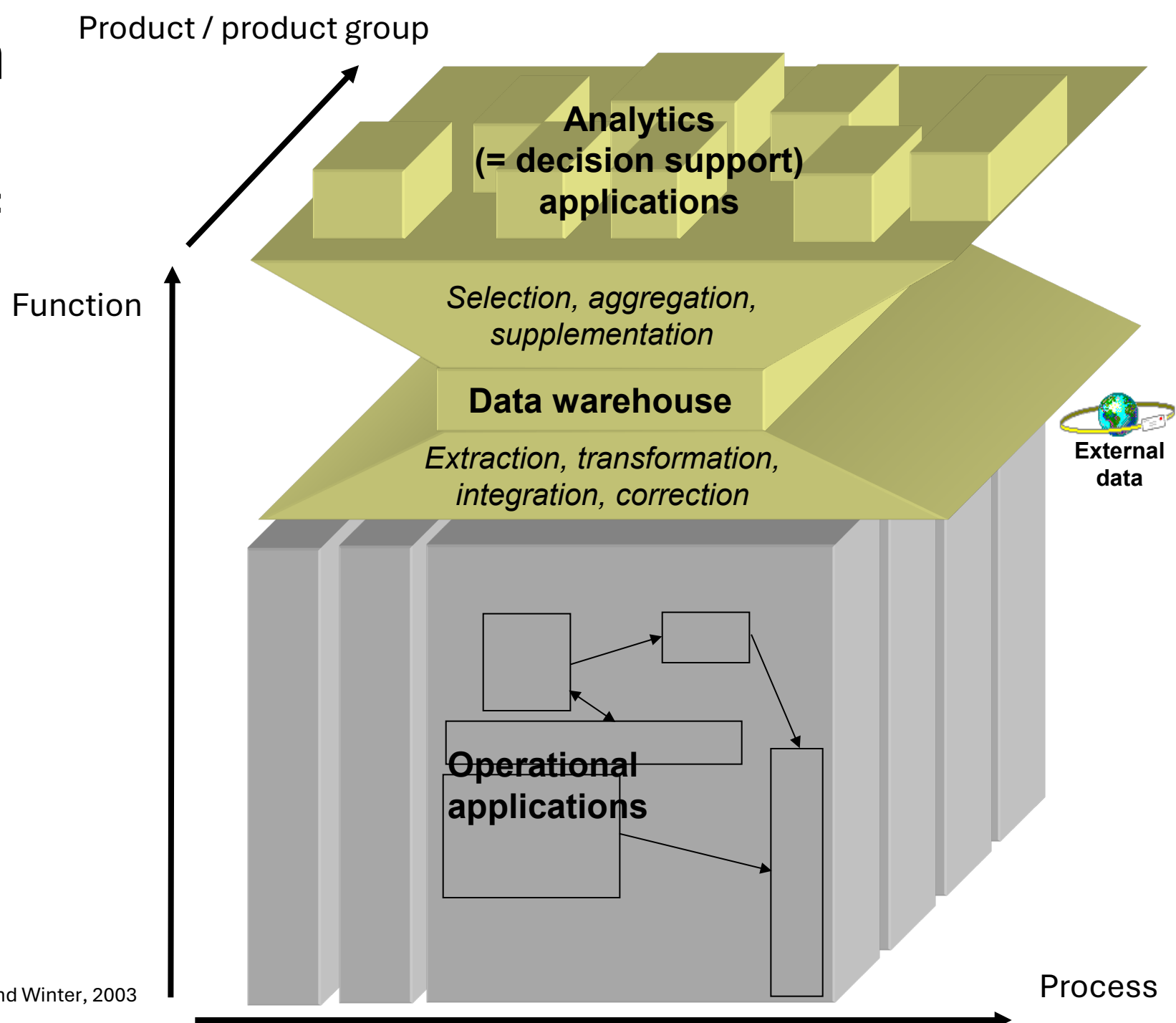
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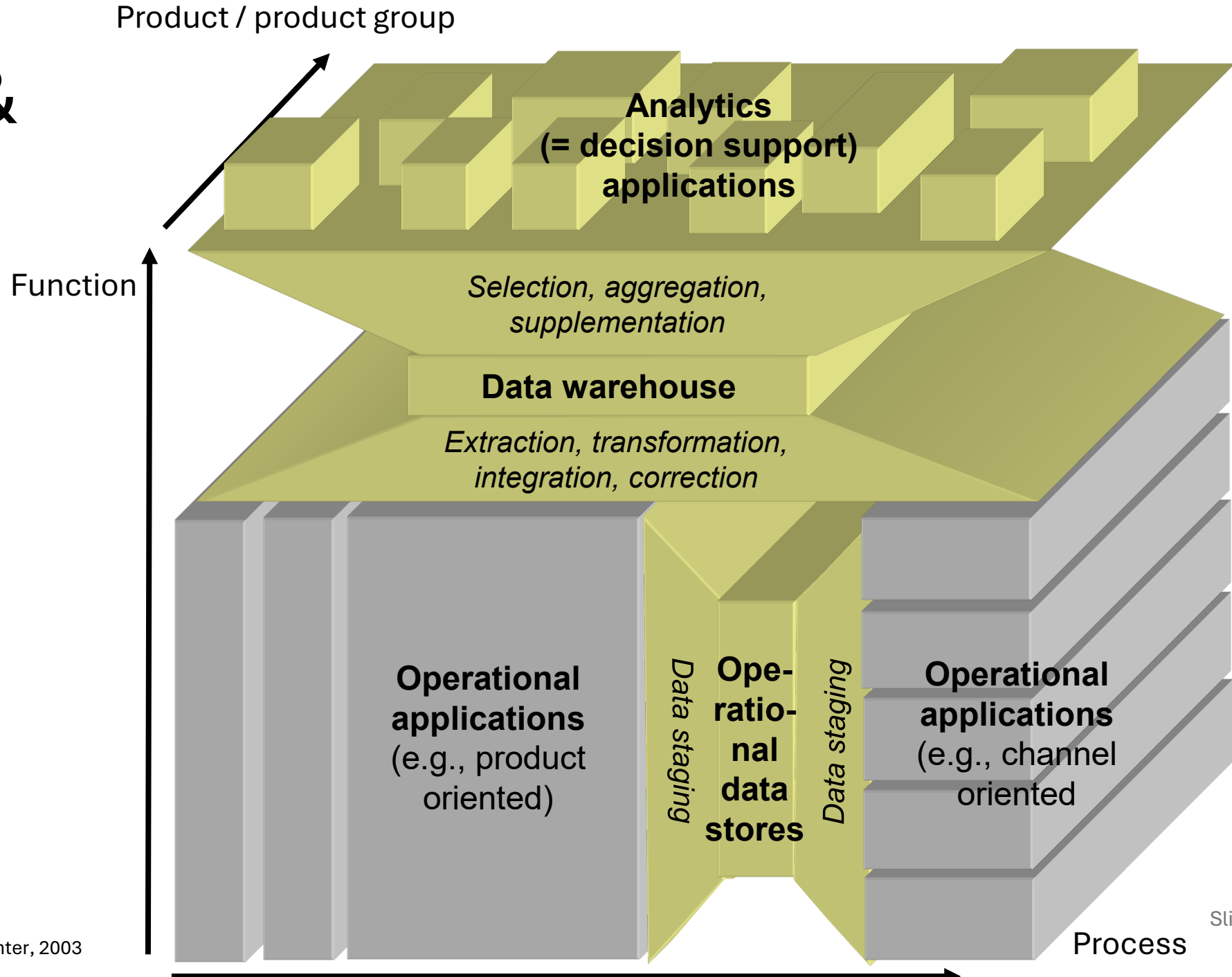
# n+m (Best Case) Instead of n\*m (Worst Case) Interfaces



# Creating a “Single Version of Truth”



# DWH & ODS

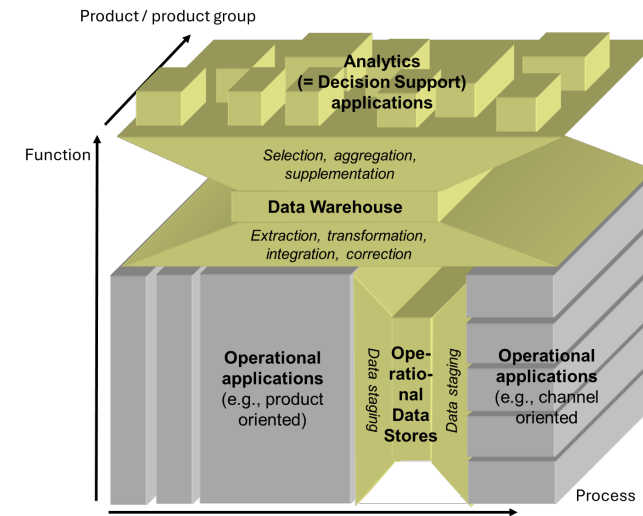


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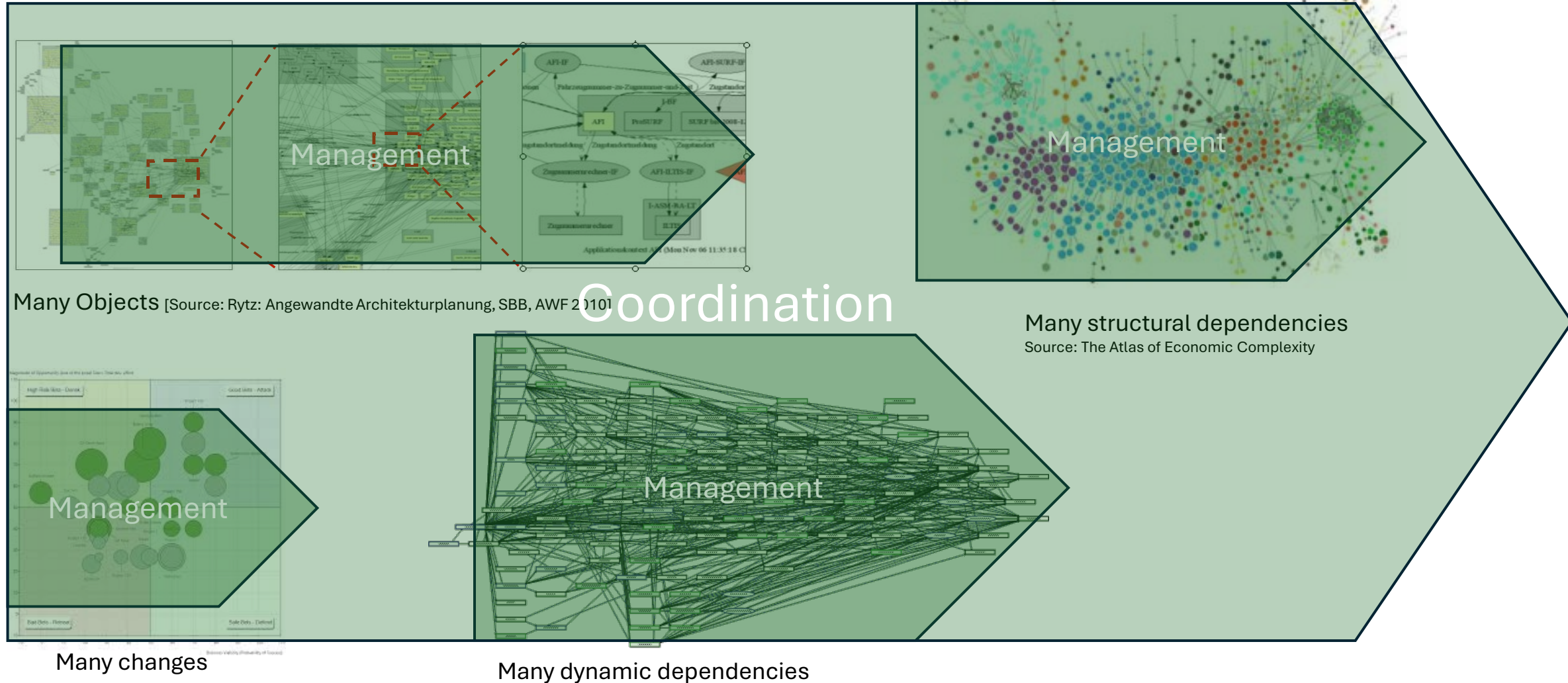
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# Increasing Amount and Variety of (Fundamentally Different) Data

	Operational application	Operational data store	Data Warehouse
Basic orientation	transaction	information object	information object
Time references	actual	actual	actual and historical
Access	read-write	read-write	read-only
Aggregation level	detailed	detailed	mostly aggregated
Integration level	isolated	integrated	integrated
Accessibility	real-time	real-time	delayed (due to derivation)



# Exponential Coordination & Management Effort Driven by Accelerating Amount and Diversity of Data Production, Data Usage and Speed of Change



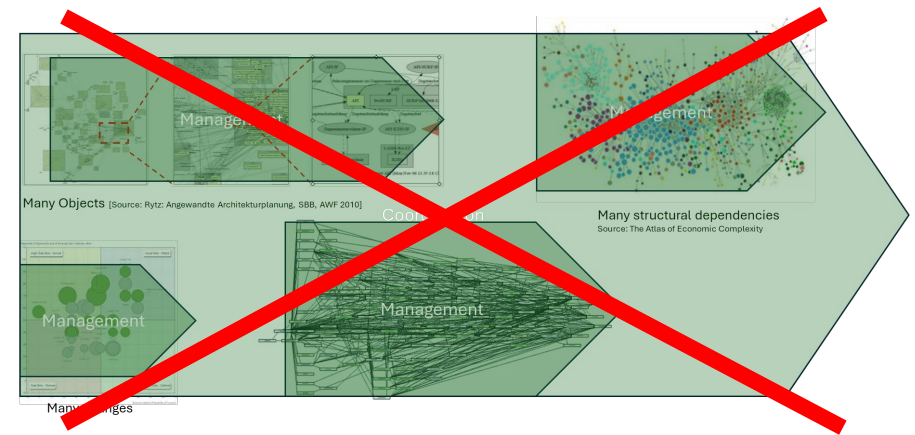
# The Downside of “Single Versions of Truth”

- Data platform **messiness**: multiple data warehouses / data stores, “shadow” data storage, file transfer chaos, ...
- Data integration and cleansing is **complex, slow and expensive**
- Analytics development often a **bottleneck**
- Traditional data supply **not flexible and accessible enough** for data scientists (data lake as workaround)
- Questionable to assign **ownership** of integrated, cleansed data to tech unit(s)
- **Locating** relevant data and **understanding** semantics (meta data) often **difficult**
- Local actors **unwilling** / not motivated to invest time and effort for maintaining **quality** of shared data
- ...

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# The Promise of (Data Management) Decentralization



**Enterprise data strategy & governance**

CDO    Product manager

- Data governance council
- Enterprise data office
- Enterprise domains

**Global data governance standards:**

- ▶ Security & compliance policies
- ▶ Data valuation & quality goals
- ▶ Interoperability standards

**Business data domain**

Domain Owner    Domain Steward



**Domain data governance:**

- ▶ Data validation & improvement processes
- ▶ Policy adaption & enforcement
- ▶ Approval processes & monitoring

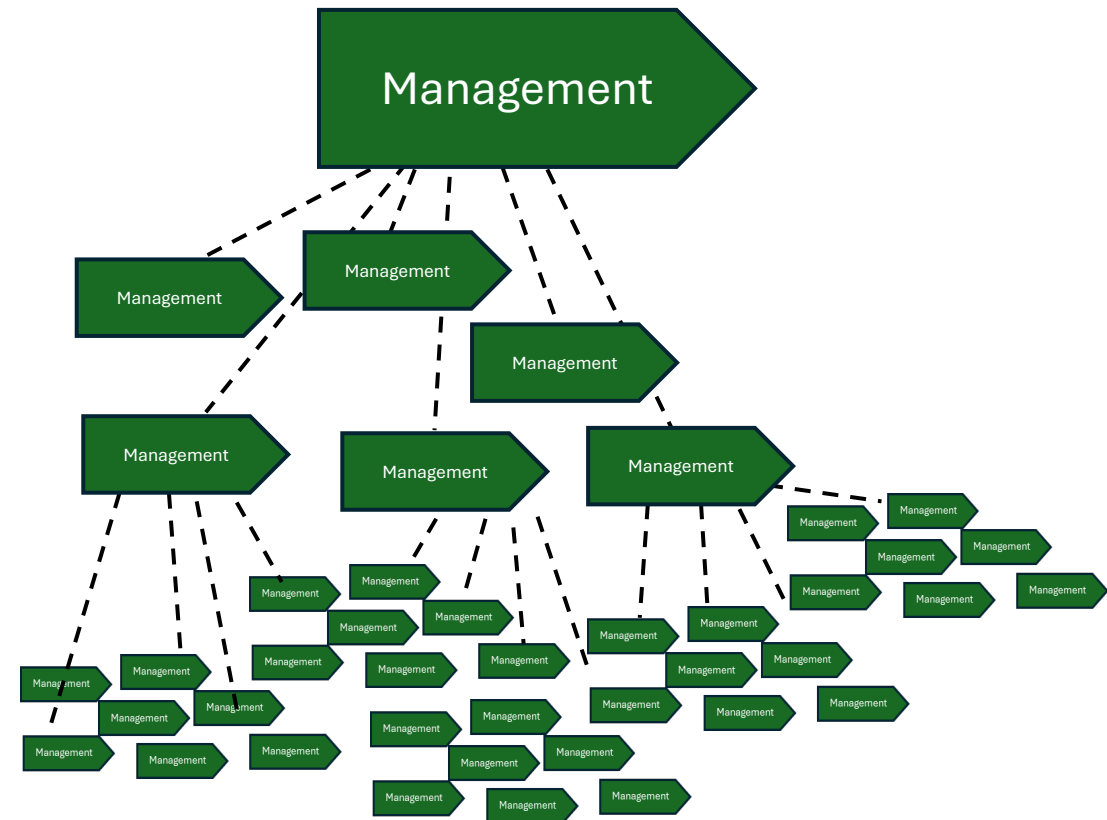
**Data product & value chain**

Product Owner    Domain Consumer

**Local data product management:**

- ▶ Ideation & design
- ▶ Data product lifecycle
- ▶ Policy implementation, data contracts, quality enforcement

Source: barc.com



# Data Mesh

## Domain-oriented Ownership of Analytical Data

- Ownership by main producer Org Unit (who often is also main user Org Unit).

## Data as a Product

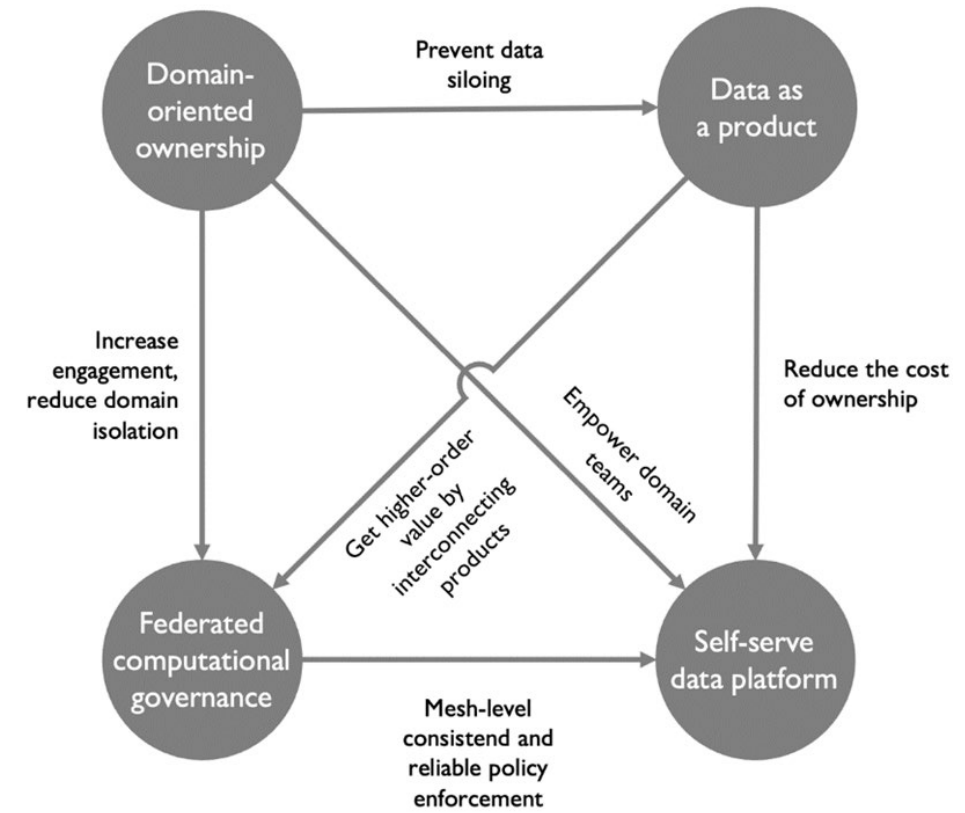
- Organized data sharing (modularity, usability, managed performance).
- A data product comprises data, code, policies and infrastructure dependencies.

## Self-serve Data Platform

- Teams shall be able
  - to manage their Data Mesh of interconnected data products over the life cycle;
  - to share their knowledge graph and lineage to enrich user experience discovering, accessing and use data products.

## Federated Computational Governance

- Domain-oriented (= decentralized) decision making and accountability around a central data platform.



# Coherent Decentralization is Difficult

## Claim

- ❏ Domain **ownership** of analytical data
- ❏ Organized data **sharing**
- ❏ Data product **composed** of data, code, policies and infrastructure dependencies
- ❏ **Teams** shall be able to manage their Data Mesh of interconnected data products over the life cycle
- ❏ **Teams** shall be able to share their knowledge graph and lineage to enrich user experience discovering, accessing and use data products
- ❏ Domain-oriented (= decentralized) decision making and **accountability** around a central data platform

## Challenge

- ⚠ Data ownership strongest at the local (function, process, product, ...) level
- ⚠ Since data quality expenses are local, sharing ambitions are limited
- ⚠ Data provision (incl. meta data) mostly perceived as “IT task”
- ⚠ Data contribution to organization as a whole perceived less important / valuable than function, process, product contribution
- ⚠ “Take” perspective of self-service platform taken for granted, supporting re-use by other units less attractive (especially the expenses)

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# Data Product

- High-quality, curated, reliable, ready-to-use set of data that can be easily accessed and applied for authorized purposes throughout the enterprise.
- Example: 360-degree customer (employee, product, ...) view.
- Essential Characteristics:
  - **Discoverable**: Easily searchable and well documented
  - **Trustworthy**: Includes quality checks and data lineage
  - **Reusable**: Designed for multiple use cases
  - **Governed**: Aligned with security, privacy, and compliance policies
  - **Accessible**: Delivered through APIs, tables, or self-service interfaces

# Types of Data Products

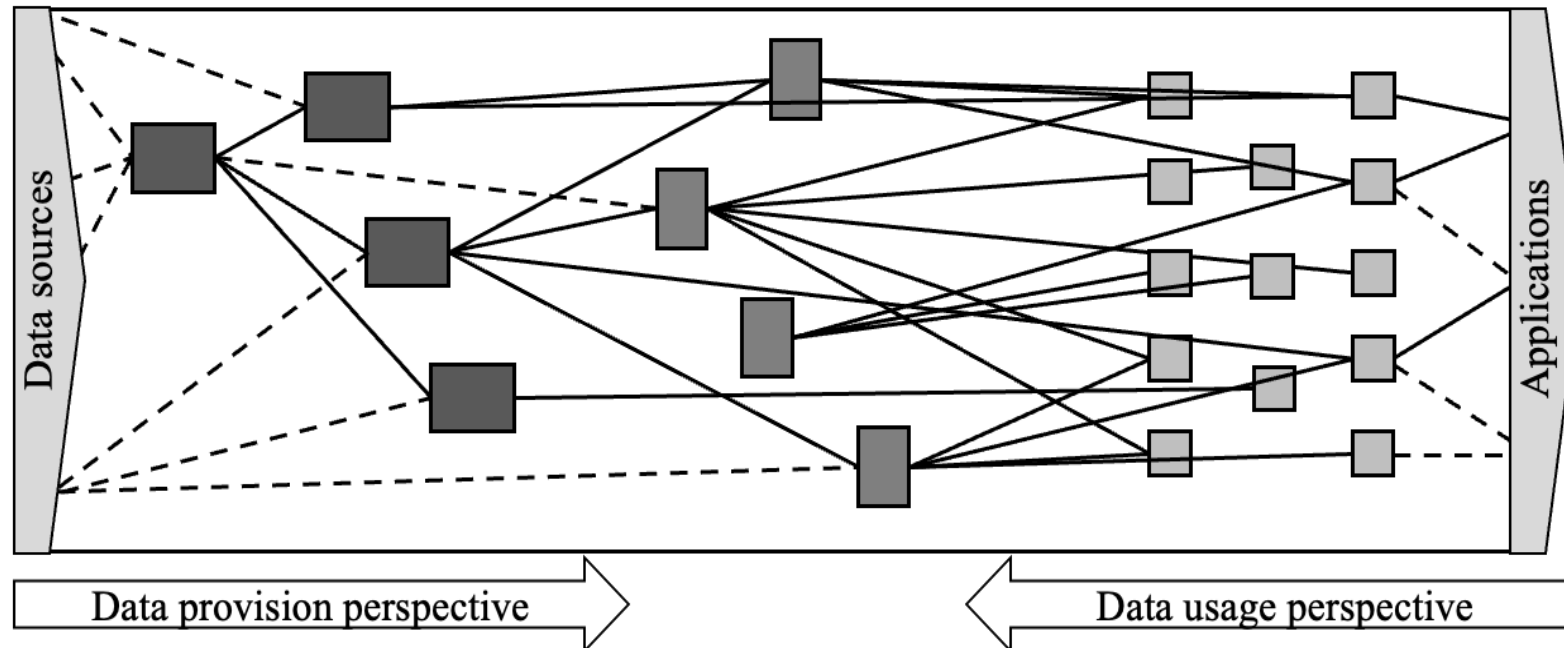
Type	Description	Examples
Operational	Real-time data used in applications	Inventory lookups, real-time market data
Analytical	Curated data sets for business analysis	Revenue dashboards, sales rollups
AI/ML	Feature-rich data for model training and inference	Customer churn scores, sentiment labels
Composite	Combined outputs from multiple sources	Customer 360 profiles

Source: [coalesce.io/data-insights](https://coalesce.io/data-insights)

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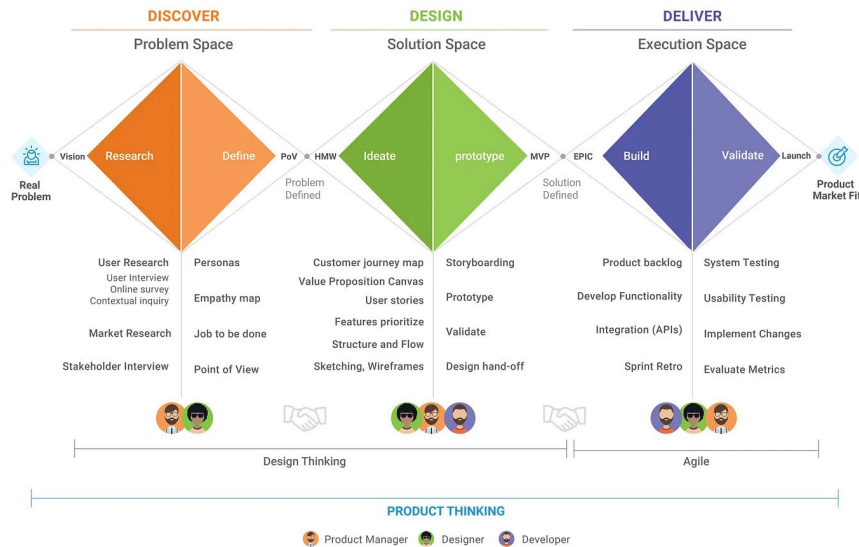
# Designing and Managing Data Products



Source: Hackl and Winter (2025)

- Different usage characteristics (operational, analytical, etc.)  
→ *Different service provision, one provision process doesn't serve all needs*
- Data products are often packaged with analytics, models, rules  
→ *Use-oriented service configuration, not based on functional differentiation (data unit, model unit, analytics unit)*

# Product Thinking: Combining Product-Solution Fit with Product-Market Fit



Source: Sudarshan Sahu on uxplanet.org

## Essential characteristics

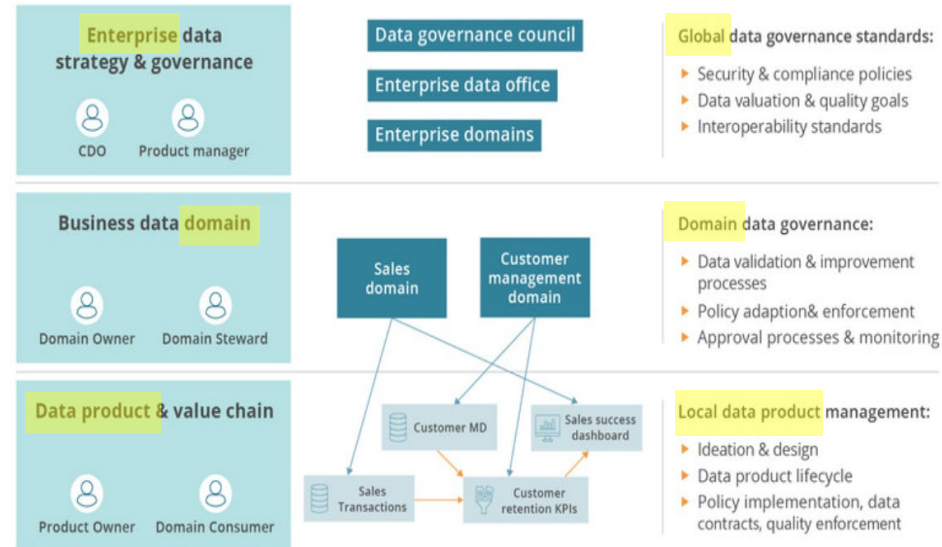
- Outside-in
- Continuous iterative development
- Self service

## Consequences for organizing information logistics

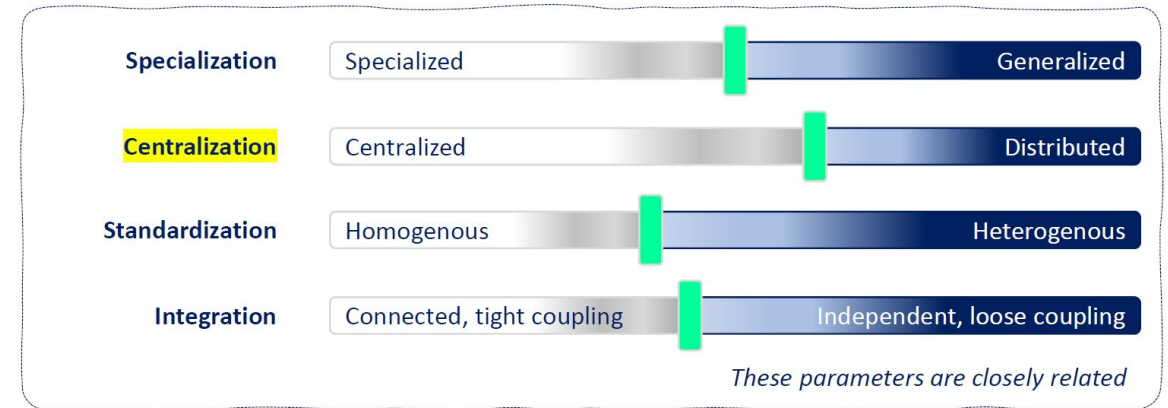
- **Agile** structures and processes
- **Customer** integration
  - Dealing with heterogeneous requirements and capabilities
  - Dealing with changing requirements
- **Value co-creation** beats traditional service delivery models
  - Need for understanding domain specifics
  - Differentiation beats harmonization / standardization
  - Adaptation to domain dynamics
- Clarity about fundamental **economics**: service vs. market?

This is not the way traditional data teams operate  
(and new capabilities are needed)  
(and structure will need to be transformed)

# The Promise of (Data Management) Decentralization



Source: barc.com

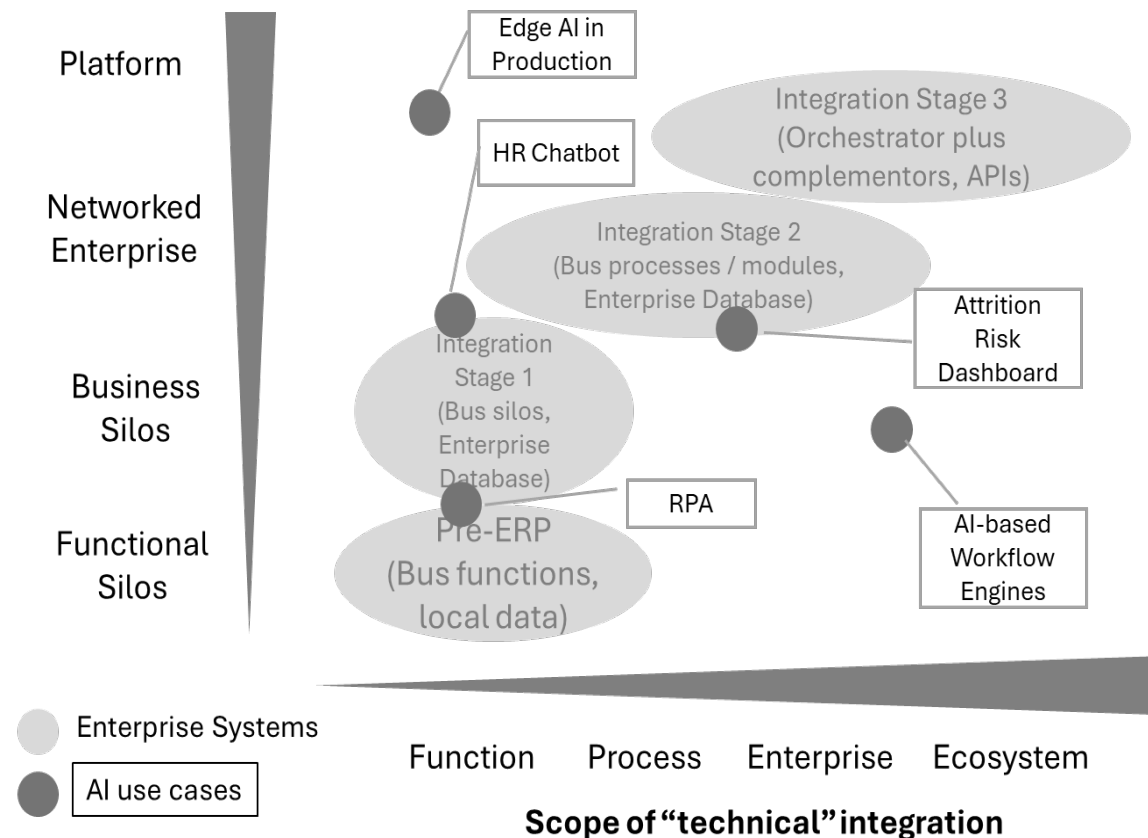


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# Enterprise-level Coordination & Integration: There's a New Kid on the Block

Degree of (coordinated) autonomy



- Novel integration / coordination combinations
- Novel non-functional challenges (e.g., validation of probabilistic behavior)
- Novel forms of “agentic” data provision and data consumption
- Capabilities (rather than functional specialization) may serve as a basis for organizational design

# DMAC - Data Management and Analytics Community

(Established @IWI-HSG in 2012)

## Affiliations of current DMAC partners



## Affiliations of guests or former DMAC partners



## Participant roles

Chief Data Officer

Chief Information Officer

Head of Data &  
Analytics

Head of Data Governance



<https://iwi.unisg.ch/de/lehrstuehle/lehrstuhl-prof-dr-robert-winter/praxis/data-management-analytics-community/>  
(or just google DMAC IWI HSG)

# Q&A

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